NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

F A C T S H E E T
(Pursuant to NAC 445A.236)

PERMITTEE: Washoe County
Department of Parks and Recreation
2601 Plumas Street
Reno, Nevada 89509

PERMIT: NEV99011 - Renewal

LOCATION: North Valley Regional Sports Complex
8085 Silver Lake Drive
Stead, Washoe County, Nevada 89506

Latitude: 39° 37' 30" North
Longitude: 119° 51' 30" West

Township 20 North, Range 19 East, Sections 4 and 5 MDB&M

PUBLIC WATER SUPPLY: Within the 7,000-foot buffer zone of fourteen public water supply wells:
3 Grand View Terrace Water District
1 Lemmon Valley Water District
2 Webb Mobile Home Park
2 Foothill Trailer Park
1 Air Base Inn
1 North Valley Bus Facility
1 Reno Sahara Trailer Park
2 CW Country Terrace MHP LLC
1 Space ERA Trailer Park

Contacts listed for the identified wells are sent individual notices of the proposed discharge.

FLOW:

0.40 million gallons per day (MGD)	Daily Maximum
0.36 MGD	30-day Average

GENERAL: The North Valley Regional Sports Complex (NVRSC) is located west of Military Road at the intersection of Sky Vista Parkway and Silver Lake Boulevard in Stead, Washoe County. NVRSC uses treated effluent from the City of Reno, Reno-Stead Water Reclamation Facility (RSWRF), National Pollutant Discharge Elimination System Permit NV0020168, for spray irrigation of approximately 50 acres of turf grass, baseball, softball, and soccer fields, and drip irrigation on associated landscape shrubs and trees. The first permit authorizing the use of reclaimed water for irrigation of this site was issued in February 2000. Irrigation with reclaimed water began in May 2003.

The RSWRF was upgraded in 1999-2000 for the purpose of producing high quality effluent to meet the State's reuse standards for unrestricted irrigation of public parks and sports fields, Class A per Nevada Administrative Code 445A.276. The plant upgrades included effluent filtration, improved disinfection facilities, a reuse pumping station, and dechlorination of non-reuse effluent. Further upgrades have recently been constructed to expand the plant capacity and to reduce the total nitrogen concentration in the effluent to below 10.0 mg/L, the nitrate drinking water standard.

Irrigation using treated effluent is conducted in accordance with a Division approved effluent management plan (EMP). The revised NVRSC EMP was approved in November 2000. According to the EMP, the turf grass is primarily Kentucky bluegrass with a nitrogen uptake rate ranging from 200 – 270 kilograms per hectare per year. Based on a 1995 – 1997 average RSWRF effluent total nitrogen concentration of 14.7 milligrams per liter, the EMP concludes that the applied nitrogen never exceeds the maximum uptake for Kentucky bluegrass. The minimum uptake was exceeded only during the height of the growing season when nitrogen demand for the turf grass should be at its peak. Due to RSWRF upgrades to reduce the effluent nitrogen concentration, monitoring of the nitrogen application rates has been removed from the proposed permit.

Effluent is pumped from RSWRF to the 1.2 million gallon, 60-mil HDPE lined storage pond on a daily basis during the irrigation season. The irrigation system consists of the effluent storage pond that is connected to a wet well equipped with two vertical turbine pumps that feed the spray and drip type heads via the irrigation piping system. With the exception of hand watering, normal operation of the irrigation system is during nighttime hours. The pond is mechanically aerated and may have chemicals added for algae and/or odor control. The storage pond shall be managed and utilized in accordance with the approved EMP to minimize the potential for discharge of reclaimed effluent to waters of the State. The pond is required to contain, with no discharge, the 25-year, 24-hour storm event and to withstand, with no physical damage, the 100-year, 24-hour storm event.

DISCHARGE CHARACTERISTICS: RSWRF receives domestic and industrial wastewater from west Lemmon Valley and Stead. Water used for irrigation is treated to meet secondary standards, nitrified, denitrified, filtered, and chlorine disinfected. Based on data provided with the permit renewal application, the annual average reclaimed water characteristics are as follows:

PARAMETER	ANNUAL AVERAGE VALUE
Fecal Coliform (CFU/100 mL)	2.2
Biochemical Oxygen Demand, 5-day (mg/L)	6
Total Suspended Solids (mg/L)	7
Total Dissolved Solids (mg/L)	401
Total Nitrogen as N (mg/L)	18.2
Nitrate as N (mg/L)	15.1
Total Kjeldahl Nitrogen as N (mg/L)	3.2
Total Phosphorus as P (mg/L)	3.2
pH (SU)	7.73
Chlorine (mg/L)	5.3

Notes:

CFU/100 mL:	Colony forming units per 100 milliliters.
mg/L:	Milligrams per liter.
as N:	As nitrogen.
as P:	As phosphorus.

Current operational flow was not reported in the renewal application, but exceeded the 30-day average discharge limitation in the third quarter of 2006. These exceedances were reportedly due to other uses, construction and dust control, of the treated effluent from the pond.

The RSWRF permit includes 30-day average and daily maximum effluent discharge limitations for total flow, 2.35 MGD and 4.13 MGD – Phase I; 4.69 MGD and 8.25 MGD – Phase II; 5-day biochemical oxygen demand, 25 mg/L and 40 mg/L; total suspended solids, 30 mg/L and 45 mg/L; pH, 6.0 – 9.0 SU; fecal coliform, 200 CFU

or MPN/100 mL and 400 CFU or MPN/100 mL; total coliform, 2.2 CFU or MPN/100mL and 23 CFU or MPN/100 mL; and total chlorine residual, daily maximum only, 0.1mg/L. The total flow, fecal coliform, and total chlorine residual limitations do not apply to the reclaimed water. Total nitrogen as nitrogen, nitrate and nitrite as nitrogen, total Kjeldahl nitrogen as nitrogen, ammonia as nitrogen, and priority pollutants are monitored without effluent limitations.

The reported NVRSC 2005 and 2006 irrigation season 30-day average flows were 0.15 MGD and 0.34 MGD, respectively, with a maximum 30-day average flow of 0.53 MGD in August 2006. RSWRF has consistently reported a reuse effluent total coliform density of 1 CFU/100 mL with a single deviation of 2.1 CFU/100 mL in July 2005. Based on discharge monitoring report data, the 2003, 2004, 2005, and 2006 total nitrogen concentration in the reclaimed water averaged 16.8 mg/L, 8.5mg/L, 11.4 mg/L, and 8.5 mg/L, respectively. The total nitrogen effluent concentration in the second half of 2006 was 6.8 mg/L.

RECEIVING WATER CHARACTERISTICS: Reclaimed water used for irrigation percolates to groundwater. The depth to groundwater is reported as variable in the permit renewal application, typically ranging from 40 feet to 80 feet below grade surface (bgs). The static water level in SCMW-1, the 2-inch NVRSC storage pond monitoring well, was 9.82 feet from the top of the PVC casing in February 2000. The static water level in SCMW-1 ranged from 12.9 feet to 11.3 feet in 2005 and 2006, after ranging from 15.26 feet to 13.925 feet in 2003 and 2004. The groundwater downgradient of the irrigated turf grass is not monitored. The regional groundwater flow direction is northeast toward the Lemmon Lake Basin.

In addition to depth to groundwater and groundwater elevation, SCMW-1 is monitored quarterly for total nitrogen (TN), total dissolved solids (TDS), and chloride. In 2005 and 2006, the average TN as nitrogen, TDS, and chloride concentrations in the groundwater were 4.0 mg/L, 362 mg/L, and 32 mg/L, respectively. All three concentrations are elevated from the 2003 and 2004 averages.

PROPOSED LIMITATIONS: The proposed limitations are designed to control application and operational parameters to protect groundwater quality.

During the period beginning on the effective date of this permit and lasting until the permit expires, the Permittee is authorized to discharge treated wastewater effluent for irrigation of the NVRSC.

Samples and/or measurements taken in compliance with the monitoring requirements specified below shall be collected:

- At the two magflow meters with instantaneous and totalized readings prior to reuse; and
- After treatment and prior to distribution for reuse. Data may be obtained from RSWRF to satisfy compliance and reporting requirements confirming effluent quality.

The supplier of the effluent, RSWRF, may perform required analytical monitoring; however, the Permittee must report the analytical results to verify compliance with effluent reuse limitations in accordance with quarterly reporting requirements.

The discharge shall be limited and monitored as specified below:

PARAMETERS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS	
	30-Day Average	Daily Maximum	Annual Total	Measurement Frequency	Sample Type
Total Flow (mgd)	0.36	0.40	-----	Continuous	Flow Meter
Annual Application Volume (acre-feet/year)	-----	-----	236[1]	Monthly	Calculation
Total Coliform[2] (CFU/100 mL)	2.2	23	-----	Weekly	Discrete
Total Nitrogen as N[2] (mg/L)	Monitor & Report			Monthly	Discrete
Total Dissolved Solids[2] (mg/L)	Monitor & Report			Quarterly	Discrete
Chloride[2] (mg/L)	Monitor & Report			Quarterly	Discrete

Notes:

[1]: Determined from the Water Demand at Sports Complex (EMP, October 2000, Table 3.1) and limited to 110% of the estimated irrigation requirement based on plant water use.

[2]: Sample results may be obtained from NV20168 and reported by the Permittee.

mgd:	Million gallons per day	mg/L:	Milligrams per liter
CFU/100 mL:	Colony forming units per 100 milliliters	as N:	As nitrogen

Rationale:

Flow: Flow is limited by the volume of treated effluent requested by the Permittee and available from the Reno-Stead Water Reclamation Facility.

Annual Application Volume: This parameter is required under the EMP. The annual application volume assigned is based on the calculated plant water use requirement (162 acre feet per year), a 20% loss through the irrigation system, and a 10% leaching fraction provided in the EMP (October 2000, Table 3.1). The discharge limitation is 110% of the calculated value.

Total Coliform: The density of total coliform in treated wastewater discharged for irrigation is restricted in accordance with NAC 445A.276 for a zero-distance buffer zone.

Total Nitrogen, *Total Dissolved Solids*, and *Chloride:* The TN, TDS and chloride concentrations in the applied reclaimed water are monitored to assess groundwater quality trends that may be identified in the storage pond monitoring well, SCMW-1.

GROUNDWATER MONITORING REQUIREMENTS: Existing monitoring wells shall be sampled for the presence of nitrogen compounds, TDS, and chloride. Monitoring wells shall be measured and sampled according to the following parameters:

PARAMETERS	GROUNDWATER LIMITATIONS	SAMPLE LOCATIONS[1]	MONITORING REQUIREMENTS	
			Measurement Frequency[2]	Sample Type
Depth to Water (feet)	Monitor & Report	Each well	Quarterly	Discrete Measurement
Groundwater Elevation (amsl)	Monitor & Report	Each well	Quarterly	Discrete Measurement

PARAMETERS	GROUNDWATER LIMITATIONS	SAMPLE LOCATIONS[1]	MONITORING REQUIREMENTS	
			Measurement Frequency[2]	Sample Type
Total Nitrogen as N (mg/L)	Monitor & Report	Each well	Quarterly	Discrete
Nitrate as N (mg/L)	Monitor & Report	Each well	Quarterly	Discrete
Total Dissolved Solids (mg/L)	Monitor & Report	Each well	Quarterly	Discrete
Chloride (mg/L)	Monitor & Report	Each well	Quarterly	Discrete

amsl: above mean sea level
mg/L: milligram per liter
as N: as Nitrogen

Footnotes:

[1]: Monitoring wells currently include: SCMW-1. All groundwater monitoring wells installed as a function of the permitted discharge shall be included in the monitoring program prescribed.

[2]: Sampling frequency may be modified or reduced, in whole or in part, at the discretion of the Division, upon demonstration of groundwater concentrations or conditions which warrant or justify alternative monitoring schedules.

- Wells shall be monitored in accordance with permit conditions and EMP requirements. Should site conditions and/or operational activities necessitate or warrant the installation of additional monitoring wells, all wells shall be incorporated into the required monitoring schedule. All subsequent monitoring wells proposed or required (designs and locations) shall be approved by the Division prior to installation and constructed in general accordance with "WTS-4: Monitoring Well Design Requirements" (NDEP, February 1997).

- Monitoring well SCMW-1 was installed to detect leakage from the effluent storage pond. Quarterly graphing of the total nitrogen, nitrate, TDS, and chloride concentrations in the groundwater to identify increasing constituent concentrations that may be caused by effluent leakage.

- Due to the shallow depth to groundwater, range 12.9 feet to 11.3 in 2005 and 2006, and the effluent TN concentrations, 11.4 mg/L and 8.5 mg/L, 2005 and 2006 annual averages, respectively, groundwater monitoring downgradient of the reuse site was considered and rejected due to the recently constructed RSWRF upgrades.

SCHEDULE OF COMPLIANCE: The Permittee shall implement and comply with the provisions of the permit upon issuance and the following schedule of compliance, including in said implementation and compliance, any additions or modifications the Administrator may make in approving the schedule of compliance.

- Upon issuance of the permit, the Permittee shall achieve compliance with all discharge limitations; and,

- Within sixty (60) days of the permit effective date, a revised EMP, stamped by a professional engineer licensed in the State of Nevada, shall be submitted to the Division for approval.

  The EMP shall contain the information required to comply with this permit. Preparation of the EMP in accordance with *WTS-1B – Guidance Document for Effluent Management Plans for Reuse of Wastewater Effluent* is recommended.

PROPOSED DETERMINATION: The Division has made the tentative determination to issue the proposed permit for a five (5) year period. Per NAC 445A.232, this permit is classified as a Discharge of Treated Effluent for Irrigation - 250,000 gallons or more but less than 500,000 gallons daily.

PROCEDURES FOR PUBLIC COMMENT: Notice of the Division's intent to issue a permit authorizing the facility to discharge to groundwater of the State of Nevada, subject to the conditions contained within the permit, is being sent to the **Reno Gazette-Journal** for publication. Notice is also mailed to interested persons on our mailing list and contacts for public water supply wells identified within 7,000-feet of the discharge. Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the date of the public notice, and must be postmarked, faxed, or e-mailed by 5:00 p.m. on **May 19, 2007**. The comment period can be extended at the discretion of the Administrator. A public hearing on the proposed determination can be requested by the Applicant; any affected State; any affected interstate agency; the Regional Administrator; or any interested agency, person, or group of persons. The request must be filed within the comment period, and must indicate the interest of the person filing the request and the reason(s) why a hearing is warranted. Public hearings granted by the Division are conducted in accordance with NAC 445A.238. The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Prepared by: Bruce Holmgren
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